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THE PLANT DISEASE REPORTER

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BACTERIAL DISEASES OF BEANS IN SOME WESTERN COMMERCIAL SEED-GROWING AND CANNING AREAS AND SOUTHERN TRUCKING SECTIONS IN 1927 AND 1928.

By Florence Hodges

In the course of surveys of commercial bean-growing sections of the west made by the writer in the summers of 1927 and 1928, a bacterial disease which is now believed to be due to Bacterium medicaginis phaseolicola has been found destroying large acreages in Montana, Wyoming and Colorado. It has come to be known as the "halo spot" disease because of the wide pale green or yellowish green areas surrounding the centers of infection. This is particularly striking on leaves bearing comparatively few lesions, the halo being much more conspicuous than the necrotic area in such instances. This symptom has been found commonly present in all fields thus far observed by the writer in which new infections were taking place. Burkholder says (oral communication) it did not occur in the fields seen by him before the publication of his paper (A new bacterial disease of the bean, Phytopath. 16:915-926, Dec. 1926), but it was commonly present in his experimental plots at the Cornell Experiment Station when seen by the writer in July, 1928. Badly attacked leaves are literally peppered with water-soaked spots and finally become brown and dry. Stems and petioles, particularly at the pulvinus, are much subject to attack, becoming reddened. There are often cracks in the stem from which emerges a whitish exudate. The pods are also very susceptible to infection, diseased pods closely resembling those attacked by Bact. phaseoli. The writer has never seen wilt in the fields attacked by this disease, though this is given by Burkholder as one of the most common symptoms of infection with Bact. medicaginis phaseolicola in New York. The disease is seed-borne. Cold rainy weather appears to favor it.

In 1927 large losses occurred in the Gallatin Valley and the Fairview section of Montana and the disease was also present in the Yellowstone Valley of that state. It was not observed in the large seed-producing areas of Idaho or California. The writer also isolated it from specimens collected by Linford in a plant disease survey of Utah made in the summer of 1927 but has no data as to the extent of its ravages there.

Bact. phaseoli had caused extensive losses through stem-girdling in Utah, fully three-fourths of the plants being broken over in some fields near Logan, but bacterial "blight" due to this organism, was not observed in Montana, Idaho, or California.

In April, 1928, the writer visited trucking sections in Florida, southwestern Georgia, and South Carolina. Fields were seen in both Florida and Georgia which were total losses due to halo blight. Bact. phaseoli was also doing considerable damage. Halo blight occurred in South Carolina but was not severe in any of the fields visited.

In the summer of 1928 a survey was made of the bean-canning sections of Wisconsin and seed-growing areas of Montana, Wyoming, and Colorado. In Wisconsin, halo blight was widely present but in a much less severe form than in the Far West and South.

In Montana the acreage was much reduced owing to the reluctance of the farmers to grow beans again after their 1927 experience. Halo blight occurred commonly in the Gallatin and Yellowstone Valleys but its ravages were considerably less than in the preceding year.

Bact. phaseoli and Bact. flaccumfaciens were also present in Montana but to a minor degree.

In both Wyoming and Colorado halo blight was very severe causing a total loss of large acreages. Bact. phaseoli was also causing considerable damage particularly in Colorado.

Thus far the writer has never observed halo blight on Great Northern, a very popular shell bean in the west, although fields of it have been observed growing in close proximity to badly infected fields of other varieties. Great Northern is, however, susceptible to Bact. phaseoli and Bact. flaccumfaciens.

All the most popular canning varieties except the Refugees are very susceptible to halo blight. The Refugees appear to be quite resistant. (October 2, 1928).

REPORT ON SOME DISEASES OF CABBAGE IN WISCONSIN, ILLINOIS, AND INDIANA

By J. C. Walker

Black-rot (Bacterium campestre (Pamm.) EFS.) and Black-leg (Phoma lingam (Tode) Desm.) in the Southeastern Wisconsin and Northern Illinois truck growing sections are being successfully eliminated largely through the use of seed free from infection. Very little naturally infected home grown seed is planted in these parts now, and that which is, is largely treated with corrosive sublimate or hot water.

Yellows (Fusarium conglutinans Woll.) is becoming less of a problem in the Middle West because of rapid advances being made, in several sections, in the selection of resistant varieties. Occasionally, however, some grower "takes

a chance" and plants a field of ordinary commercial cabbage. This year one farmer in the western part of Kenosha County, Wisconsin, lost eight acres of common Danish Ball-Head cabbage on land he believed free from yellows, which indicates that the disease is spreading slowly. Ordinarily no appreciable loss is incurred in the sections infested with yellows, but all the farmers in these regions use nothing but yellows resistant strains of cabbage.

Clubroot (Plasmodiophora brassicae Wor.) has, during the past few years, become the most menacing cabbage disease in the Middle West. Infestation is spreading slowly and has caused a very considerable amount of alarm on the part of growers owning affected farms. It has thus far been impossible to breed strains resistant to this disease. However, field observations point to the possibility that long rotation in conjunction with consistent elimination of susceptible weeds, and the use of uncontaminated manure and tools, tends to lessen the severity of the disease. Methods of control have been studied by the writer (manuscript now in preparation for publication) which have shown that the hydrate of lime, at the rate of two tons to the acre, has proved a successful disease inhibitant and appears to remain effective for a number of years. Pure carbonates of lime, ground raw limestone, or burnt lime fully air-slaked, appear practically incapable of disease inhibition. The losses from clubroot this year have been materially lessened by the growers through planting the cruciferous crops in their fields which are most nearly free from the disease. In the northern part of Wisconsin, where they grow cauliflower in areas restricted to drained peat soil, the clubroot trouble has become quite acute. Where tried under these conditions, the hydrated lime treatment shows indications of being a successful inhibitant.

Rhizoctonia of cabbage (Corticium vagum B. & C.) was determined again as the most serious seedling trouble affecting the cabbage seed beds visited this spring. Estimates of loss due to Rhizoctonia on seedlings vary from 2 per cent to 12 per cent in Wisconsin and Northern Illinois. Practically, however, these losses do not serve to diminish the final planted acreage. The growers always plant excess amounts of seed and simply sort out the affected seedlings at transplanting time. Rhizoctonia was more or less in evidence all season as a decay on foliage leaves touching the soil, and a few heads attacked by Rhizoctonia could be found in cabbage sections of Illinois, Indiana, and Wisconsin. The perfect stage was found under cabbage plants in several fields in Wisconsin.

ONION STORAGE TROUBLES IN ILLINOIS, WISCONSIN, INDIANA, AND IOWA

By J. C. Walker

The onion set crop, generally speaking, is somewhat shorter this year than last. This was due, it is believed, to the unusually hot-dry period during the time the sets should have grown most rapidly, followed by a week of excessive rainfall. Under normal conditions onions are harvested shortly after they ripen up, but this year, due to premature ripening, the time between maturity and harvest was unusually long. At best, harvest operations were about two weeks earlier this year than usual and consequently the pulled bulbs were stacked in

the field while it was warm over an abnormally long period. These conditions, it seems to the writer, would be especially conducive to the development of storage troubles.

As early as the middle of July conidiophores of Botrytis were invariably found upon injured and dead tips of onion leaves in all fields visited. At that time white sets and large bulbs growing in the field were examined for neck rot but nothing was found. Two weeks later, however, a few cases were noted upon injured white bulbs near Somers, Wisconsin. About the middle of August, two per cent of neck rot was found on harvested white sets grown near Kenosha, Wisconsin. Between the dates September 10 to 20, 1928, numerous counts were made upon lots of white onion sets from different regions. No lots were free from the disease, caused by Botrytis allii Munn, B. byssoidea Walker, and B. squamosa Walker, and the trouble seemed to be equally severe in all regions investigated.

Table 1. Severity of neck rot attacking white onion sets

Date - 1928	State Where Grown	Percentage of Neck Rot
September 10	Wisconsin	33
September 11	Wisconsin	12
September 11	Illinois	36
September 11	Illinois	27
September 13	Indiana	31
September 17	Indiana	50
September 19	Iowa	66
September 11	Iowa	50

It is interesting to note that two Chicago concerns, shippers of onion sets, have been drying all white sets they are shipping or storing. Drying of white sets, so the writer was informed by the head of one of the firms, will be considered a standard treatment for white sets every year in the future.

Smudge (Colletotrichum circinans (Berk.) Vogl.) occurs on white sets this year but not so seriously as last. Relative freedom from the trouble seems to be coupled with a fairly dry season during the bulbing period and early harvest.

Purple blotch (Macrosporium porri Ell.) was found as a trace on white onions harvested around Lansing, Illinois. It was found occurring earlier in the season on seed stalks in Wisconsin, but no infection was found on large bulb onions or white sets after harvest. White sets from Iowa were found to contain two per cent of diseased bulbs.

ADDITIONAL REPORTS ON POTATO LATE BLIGHT (PHYTOPHTHORA INFESTANS)

Massachusetts: Actual counts: field 1, 1,000 potatoes as dug, 208 infected. Field 2, 100 potatoes as dug, 18 infected. At a wet end in one field, 30 per cent infected; dry portion of field, about 1 per cent infected. (W. H. Davis, October 15).

West Virginia: Blight appeared first in the higher mountainous districts. The disease spread more slowly than might have been expected. Usually infection is severe and general by August 1, but this year infection was rather erratic. By July 15 scattered unsprayed fields were severely blighted. In many cases the crop was reduced 50 to 75 per cent. Rather unusually only the plants were killed; but little rotting of tubers occurred. (Archer, Oct.15).

ANGULAR LEAF SPOT OF CUCUMBER IN OREGON

"Angular leaf spot (Bacterium lacrymans). Collected at Salem during July and August. Serious in a one-acre piece of land in 1927 where overhead irrigation is practiced. About the same or worse this year. Twelve-spotted cucumber beetle common. Also present but not serious in large field near Portland in 1928." (F. D. Bailey, Oct. 1).

COTTON DISEASES IN FLORIDA

The following report was sent in by M. N. Walker (Sept. 2).

"Angular leaf spot (Bacterium malvacearum). Leaf and boll infections were very common this year. Some shedding of leaves occurred late in the season, especially when followed by heavy infections of Macrosporium. Probably a large proportion of the boll rots occurring this year entered through angular leaf spot lesions."

"Boll rots (Diplodia, Glomerella, Fusarium). Diplodia boll rot is the most serious boll rot occurring in Florida. Loss for the State will average 10 per cent on account of unusually abundant rain. Plants were observed on which injury was almost 100 per cent."

"Anthracnose was more abundant this year than last, but of no serious importance. Scattered and low percentages of infection."

"Fusarium boll rot (F. moniliforme) ranked next to Diplodia this year in damage, but was much less serious, probably not exceeding 1 or 2 per cent."

"Other boll rots were observed such as Rhinotrichum and Olpitrichum rots, but were of no importance."

"All of the foregoing fungi entered largely through angular leaf spot lesions, which were unusually abundant this year."

SQUASH DISEASES

Maine: Sclerotinia rot (S. sclerotiorum). In land that has given trouble on beans, a mature fruit of blue Hubbard squash became infected by contact with a diseased weed. (Data from Dr. Morse). First report for squash from Maine. (Oct. 8, Folsom)

New Mexico: Curly top (western yellow blight). The limiting factor in squash production in the state. (Crawford, Sept. 1).

DISEASES OF POME FRUITS IN WEST VIRGINIA

The following reports were received from W. A. Archer (Oct. 15).

APPLE

"Scab (Venturia inaequalis). In the earlier part of the season infection was fairly abundant on the leaves and seemed to point toward severe damage. At the end of the year, however, infection was not so severe as had been expected. On the commercial crop the fruit showed a low percentage of damaged apples. Even in some neglected orchards much of the fruit was clean.

"Blotch (Phyllosticta solitaria) was severe this year only in southern neglected orchards. In the commercial areas, i. e., eastern part of the state, infection was controlled perfectly by spray.

"In some localities powdery mildew (Podosphaera oxyacanthae) was more severe than usual, on some varieties.

"Fly speck (Leptothyrium pomi) unusually severe this year.

PEAR

"On unsprayed trees Fabraea maculata caused severe defoliation and in many localities the fruit was also badly spotted.

"Mycosphaerella sentina. In various localities this leaf spot appeared in a severe form, although defoliation was only slight or moderate.

"Brown blotch (undet.) is reported for the first time, although undoubtedly it has been present previously. Many varieties were severely attacked."

QUINCE

"Fabraea maculata caused severe defoliation and spotting of fruit. Powdery mildew (Podosphaera oxyacanthae) found for the first time in the

state. It occurred abundantly, especially on the lower leaves. Bitter rot (Glomerella cingulata) and black rot (Physalospora malorum) severe and general."

REPORTS ON GRAPE DISEASES

New York: Visited eight vineyards in Steuben and Yates counties in the Keuka Lake district. Powdery and downy mildews (Uncinula necator and Plasmopara viticola) are generally moderate to severe on foliage - probably heaviest for many years. Considerable fruit rot, some of which is caused by the dead arm fungus (Cryptosporella viticola) - the remainder not identified. No black rot (Guignardia bidwellii) was found on fruit and only slight infection on foliage. Very little spraying is done. (Thomas, Sept. 6).

West Virginia: Black rot (G. bidwellii) was an important factor for the first time since 1924. In some southern sections, fully half of the crop was rotted. (W. A. Archer, Oct. 15).

Downy mildew (P. viticola) was abundant this year for the first time in four years. Infection was general and appeared rather late in the season. (W. A. Archer, Oct. 15).

BACILLUS AMYLOVORUS ON LOQUAT IN ARIZONA

What is apparently the first report of Bacillus amylovorus on loquat in Arizona was received from J. G. Brown (Sept. 24). The disease was causing severe damage to one tree on the University Campus at Tucson.

CRACKING AND DROPPING OF PECANS

In response to an inquiry concerning the cause of cracking and falling of pecans, J. B. Demaree of the Office of Fruit Disease Investigations, has offered the following possible explanation:

"Cracking of thin shelled pecans was quite prevalent this season throughout the Gulf Coast area from Pensacola, Florida to Lafayette, Louisiana. The variety Frotcher suffered more severely than any other variety observed. I think almost the entire crop of this variety fell prematurely during the first week of September in the Mobile district, and it was especially severe on the east side of the Mobile Bay.

"We have no experimental data as to the cause of the cracking of pecans, but it must be due to a high sap pressure within the nut during a

a certain stage of its development. If a pecan is punctured with a needle during August or the first of September, immediately upon withdrawal of the needle sap will spurt out of the opening 4 or 5 inches beyond the nut. Since this cracking has been observed only with the thin shelled varieties, it is my opinion that the sap pressure within the nut becomes sufficiently high to crack the shell. The shell at this stage of development of the nut is quite soft. We know that even a slight puncture of the shell during August, even a puncture caused by a stink bug, will cause the nut to drop, and the same result will happen, of course, if the shell is cracked. I believe this trouble could be produced artificially if one was prepared to irrigate an orchard heavily during this critical stage in the development of the nut."

SECOND REPORT ON CORN DISEASES IN FLORIDA

A. H. Eddins, who contributed the report on corn diseases in Florida, published in the Reporter of September 1 (p. 85), has sent in the following statement as of September 2.

"Diplodia dry rot (D. zeae, D. Macrospora) is probably the most destructive ear rot disease in the state. Very prevalent on down corn overrun with velvet beans. Corn on Experiment Station plots at Gainesville showed 2 per cent of ears partially or wholly destroyed by Diplodia. Moldy ears were much more common in some fields in North Florida than they were in the vicinity of Gainesville.

"Fusarium ear, stalk, and root rot (Fusarium sp., F. moniliforme). Moldy ears caused by Fusarium common in all fields visited in North and West Florida. Many fields of corn were blown down by storms which occurred in August and September. This corn lying on the ground was badly damaged by the dry rot organisms.

"Brown spot (Physoderma zeae-maydis) has caused much lodging of the corn in all sections.

"Gibberella saubinetii, Helminthosporium turcicum, and Ophiobolus heterostrophus were found on corn in various parts of the state."

RICE DISEASES REPORTED FROM FLORIDA

"Blast (Piricularia grisea) common on the host wherever grown, especially destructive in seedling stage and at blossoming time.

"Blight (Helminthosporium oryzae) very destructive in seedling stage. Common in all fields.

"No straighthead observed in fields examined." (G. F. Weber, Oct. 1).

PHYMATOTRICHUM OMNIVORUM IN THE SOUTHWEST

ALFALFA in New Mexico:

"Especially severe in the Pecos Valley around Artesia. Considerable acreage being plowed up." (Crawford, Sept. 10).

PEPPER TREE in Arizona:

"This disease takes heavy toll annually, worse than in 1927 in Pima County. About 5 per cent of trees of all sizes killed. (R. B. Streets, Oct. 1).

SORGHUM DISEASES IN NEW MEXICO

"Kernel smut (Sphacelotheca sorghi) has been eliminated from the state by the use of copper carbonate dust. Just a trace is now found. Damage slight.

"Head smut (Sorosporium reilianum) found in eastern New Mexico but damage is slight.

"Blight (Bacillus sorghi) common in eastern part of state. Damage slight." (Crawford, Oct. 1).

SOME REPORTS ON CEREAL RUSTS

CORN: Puccinia sorghi in Maine

"Not considered common in Maine, but with the adoption of Golden Bantam for commercial canning occurring recently, we now have complaints of severe injury." (Folsom, Oct. 1).

WHEAT: Puccinia triticina on fall wheat in Kansas

"A small amount of leaf rust appeared on early-sown Kanred wheat on October 20. Too dry for rust to spread much this fall." (C. O. Johnston, Oct. 1).

SOME SPECIMENS RECEIVED

Sclerospora graminicola on Chaetochloa viridis. State College, Pennsylvania, collected and determined by G. L. Zundel, September 18.

Tuberculariа sp. on foliage of Rosa sp., Oneco, Florida. Anna E. Jenkins, September 13.

Sphaeropsis malorum on Rosa sp. cult. Florence, South Carolina, Septem-

ber 5. Coll. Anna E. Jenkins, det. C. L. Shear and A. E. Jenkins.

Erysiphe cichoracearum on Zinnia elegans. Washington, D. C., C. A. Ludwig, October 9.

Bacterium marginatum on Gladiolus. Maryland, College Park, August 17, and Baltimore, September 28. Det. Freeman Weiss.

Aster yellows on Ambrosia artemisiifolia. District of Columbia, C. A. Ludwig, September 21. Determination verified by L. O. Kunkel, who states that ragweed is one of the common hosts of aster yellows.

LEAF SPOT OF SUNFLOWER (SEPTORIA HELIANTHI)

West Virginia: Infection of giant sunflower was severe and general, commonly half of the leaves were killed and frquently in southern localities plants were killed. (Archer, Oct. 15).

MISCELLANEOUS NOTES

HORSE CHESTNUT: Guignardia aesculi in Kansas

"This disease had completely defoliated a large tree on the college campus at Manhattan by October 1." (C. O. Johnston).

CHINA ASTER: Fusarium wilt and yellows in West Virginia

"Many plantings were entirely blighted by wilt (Fusarium conglutinans callistephi). Ten per cent infection was common throughout the state.

"Fully 50 per cent of the blossoms were ruined by yellows (virus)." (Archer, Oct. 15).